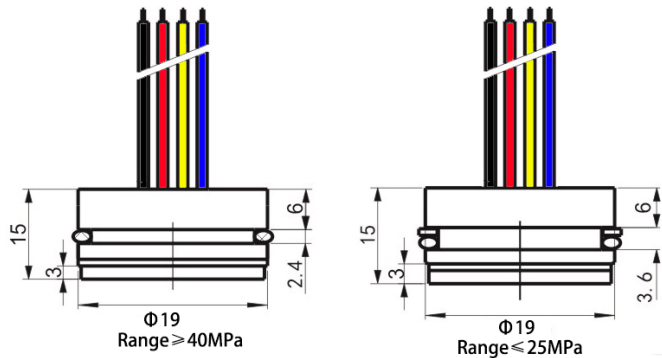
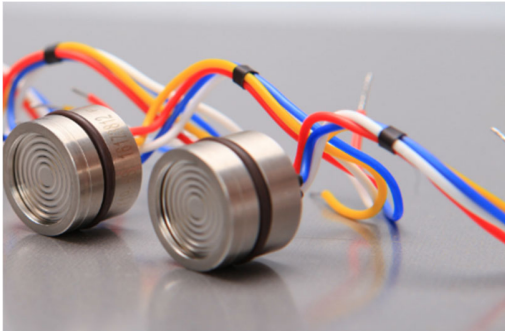


ESS3 OEM PRESSURE SENSOR **【2024】**

General Instruction and Datasheet



ESS3 High Stable OEM Piezoresistive Pressure Sensor



■ Range: 0~100MPa ■ Overload Pressure: 150%~300% ■ Accuracy: 0.2%/FS ■ Φ1mm~19mm Standard OEM Pressure Sensor

Description

ESS3 Series OEM Pressure Sensor uses a high-sensitivity piezoresistive silicon die as sensing component, which is protected against ambient influences by SS316 housing sealed with a concentrically corrugated diaphragm. Inside the housing, the filled silicone oil assures the measured pressure can be transmitted onto silicon die and then transform the pressure to electric signal.

ESS3 Series OEM Pressure Sensor is available all pressure ranges from -100KPa to 100MPa. Also the different dimension can be chosen: diameter from 12 mm to 19 mm, height from 5 mm to 15 mm. Pressure type including Gauge, Differential, Absolute and Sealed Gauge are all available.

Key Features & Benefits

- Pressure range -100kPa~10kPa...100MPa
- Gauge, Differential, Absolute, Sealed gauge
- Constant Current/Voltage power supply
- Isolated construction, measure various media
- Φ12~ Φ19mm OEM Pressure Sensor
- Full Stainless Steel 316
- Wide temperature compensation -10°C~80°C
- Long-term stability ±0.2%FS/year

Application

- Industrial process control
- Level measurement
- Gas, liquid pressure measurement
- Pressure checking meter
- Pressure calibrator
- Liquid pressure system and switch
- Cooling equipment & A/C system
- Aviation and navigation inspection
- Pneumatics and hydraulics systems

Standard Range

Range	Overload	Output/F.S (mV)	Typical Value(mV)	Pressure Type
0~10KPa	300%	35~60	45	G
0~35K Pa	300%	55~80	70	G/A
0~70K Pa	300%	55~80	60	G/A
0~100 KPa	300%	60~85	75	G/A
0~200 KPa	300%	65~85	75	G/A
0~400 KPa	300%	60~80	70	G/A

Technical Parameters

Parameters	Typ.	Max.	Unit
Nonlinearity	0.2	0.5	%FS
Hysteresis	0.05	0.08	%FS
Repeatability	0.05	0.08	%FS
Zero Output	±1	±2	mV DC
FS Output	100		250
Input/ Output Impedance	2.6	5.0	kΩ

ESS3 GID-3-EV03.3.3

0~1.0 MPa	300%	80~120	100	G/A
0~2.0 MPa	200%	50~70	60	G/A
0~3.5 MPa	200%	100~120	110	G/S/A
0~7.0 MPa	200%	120~150	135	S/A
0~10 MPa	200%	180~230	200	S/A
0~25 MPa	200%	140~170	150	S/A
0~40 MPa	200%	230~280	250	S/A
0~60 MPa	200%	100~160	130	S/A
0~100 MPa	150%	100~150	120	S/A

Notes: G for Gauge pressure; A for Absolute pressure; D for Differential pressure; S for Sealed gauge.

Zero Temp. Drift*	±0.4	±1.0	%FS, @25°C
Sensitivity Temp. Drift*	±0.4	±1.0	%FS, @25°C
Long-term Stability	0.2		0.3

*The typical value of 0~10kPa of zero temperature drift and sensitivity temperature drift is 0.5%FS@25°C, max value is 1.2%FS@25°C



Construction Performance

Diaphragm: Stainless Steel 316L
Housing: Stainless Steel 316L
Pressure leading tube: Stainless Steel 316L
O Ring: $\phi 16 \times 1.8\text{mm}$ (nitrile rubber or viton)
Measuring Medium: Which is compatible with SS316L, viton, nitrile rubber
Packing Medium: Silicon Oil
Net weight: 15~45g

Electric & Environment Performance

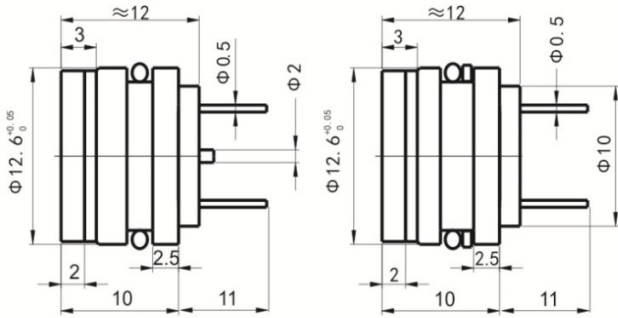
Power supply: 1.5mA (Max input voltage is 10VDC)
Insulation Resistance: 500M Ω @100VDC
Overpressure: 1.5~3 times FS
Vibration (20~500Hz): 20G
Useful Time (25°C): >1*100 Million Times
 @Pressure Circulation(80%FS)
Response Time: $\leq 1\text{ms}$
Storage Temp.: -40~+125°C
Operating Temp.: -40~+85°C
Compensation Temp.: 0~50°C@<400kpa; -10~70°C@>=400kpa;

ES3 Series Key Features

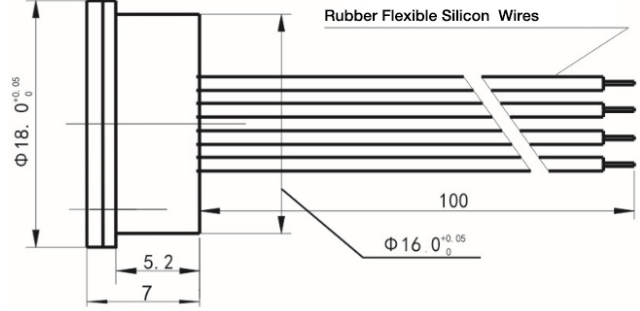
Model		Range	Diameter	Type	Accuracy/FS	Input	Output
ESS312	Compact Size Pressure Sensor	0-2bar-1000bar	12.6mm	G/A/S	0.1%-0.2%	1.5mA	$\leq 150\text{mV}$
ESS319	Universal OEM Pressure Sensor	-1bar-0.1bar-	19mm	G/A/S	0.1%-0.2%	1.5mA/5V/10V	$\leq 150\text{mV}$
ESS319-	Digital Output Pressure Sensor	-1bar-0.1bar-	19mm	G/A	0.3%-0.5%	3.3V/5V	$\leq 150\text{mV}$
ESS319T	Pressure & Temperature Sensor	0.1bar-30bar	19mm	G/A/S	0.25%	1.5mA/5V/10V	$\leq 150\text{mV}$
		-104°F -185°F			0.50%		
ESS319I	Analog Output Pressure Sensor	-1bar-0.1bar-	19mm	G/A/S	0.20%	10-30V	6V
ESS320	Differential Pressure Sensor	0-0.35bar-35bar	19mm	D	0.1%-0.2%	1.5mA/5V/10V	$\leq 150\text{mV}$
ESS322	All Welded Pressure Sensor	-1bar-0.1bar-	28mm	G/A/S	0.1%-0.2%	1.5mA/5V/10V	$\leq 150\text{mV}$
ESS323	Welded Joint Type Pressure	-1bar-100bar	19mm	G/A/S	0.1%-0.2%	1.5mA/5V/10V	$\leq 150\text{mV}$
ESS331	High Temperature Pressure	0-5bar-100bar	29.5mm	G/A/S	0.1%-0.2%	1.5mA/5V/10V	$\leq 150\text{mV}$
ESS332	Flat Base Pressure Sensor	-1bar-0.1bar-	19mm	G/A/S	0.1%-0.2%	1.5mA/5V/10V	$\leq 150\text{mV}$
ESS350	Flat Diaphragm Pressure Sensor	0-0.35bar-60bar	50mm	G/A/S	0.20%	1.5mA/5V/10V	$\leq 150\text{mV}$

ES3 Series Portfolio

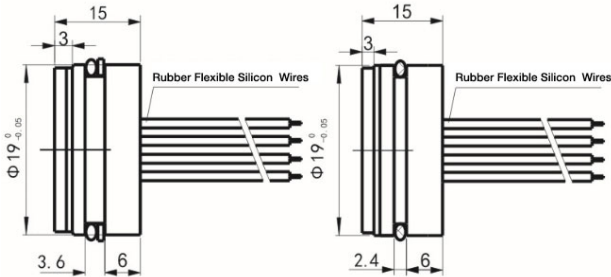
ESS312 Compact Size Φ 12 Piezoresistive OEM Sensor
Range: 200Kpa~100Mpa



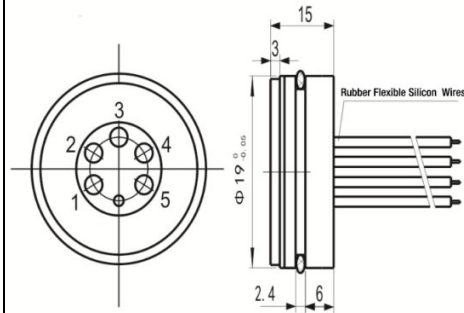
ESS318 Low Range Piezoresistive OEM Sensor
Range: 1Kpa~±10Kpa



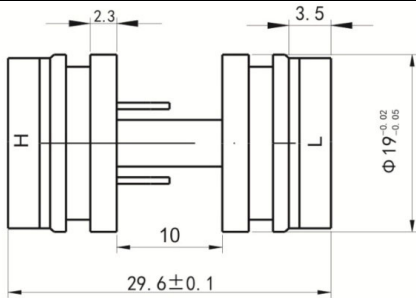
ESS319 High Stable Universal Piezoresistive OEM Sensor
Range: -100Kpa~10Kpa~100Mpa



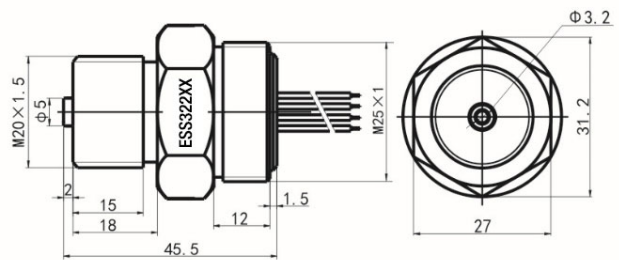
ESS319P Flush Diaphragm Piezoresistive Pressure Sensor
Range: -100Kpa~10Kpa~3.5Mpa



ESS320 Piezoresistive OEM Differential Pressure Sensor
Range: 10Kpa~3Mpa



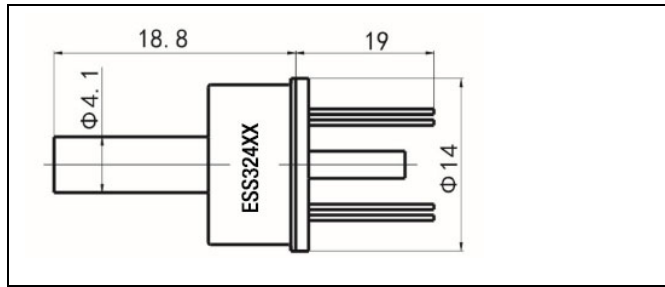
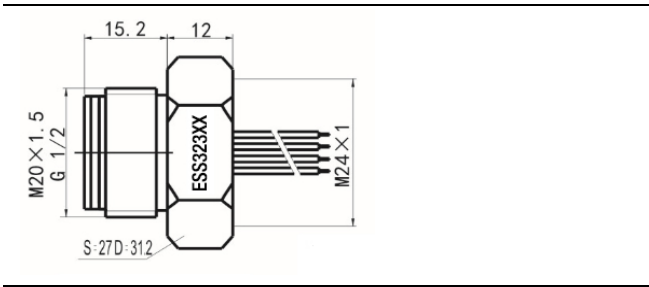
ESS322 Welded Piezoresistive Pressure Sensor
Range: -100Kpa~10Kpa~100Mpa



ESS323 Welded Flush Diaphragm Piezoresistive Sensor
Range: -100Kpa~10Kpa~10Mpa

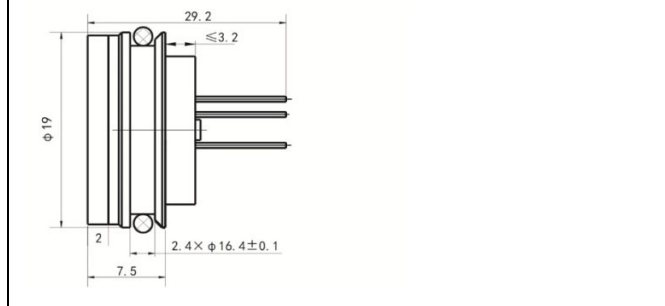
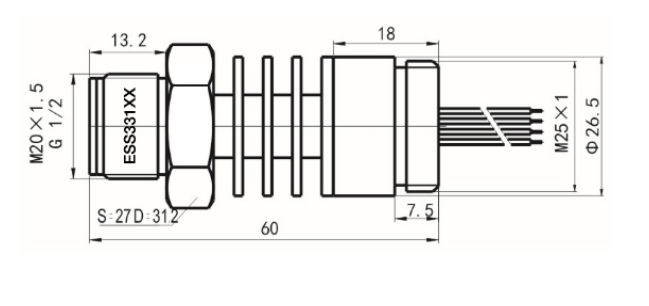
ESS324 TO-8 Housing Piezoresistive Pressure Sensor
Range: 5Kpa~600Kpa

ESS3 GID-3-EV03.3.3



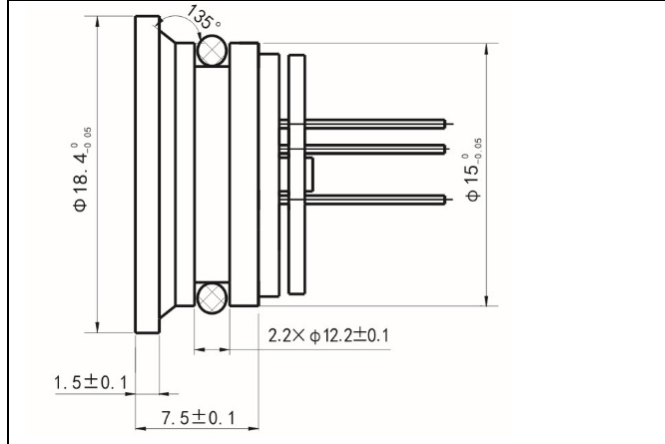
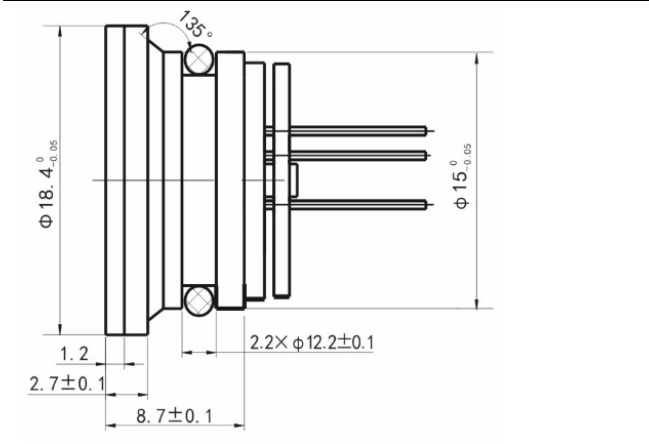
ESS331 High Temperature Piezoresistive Pressure Sensor
Range: 35Kpa~10Mpa

ESS332 Welded Flat Base Piezoresistive Pressure Sensor
Range: -100Kpa~10Kpa~3.5Mpa



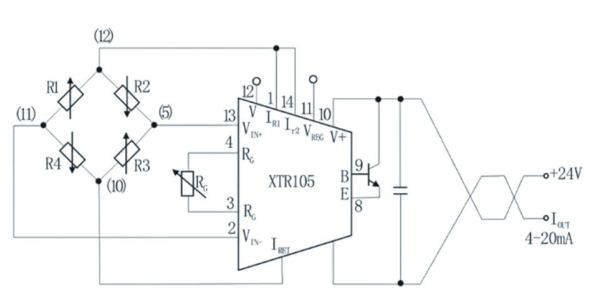
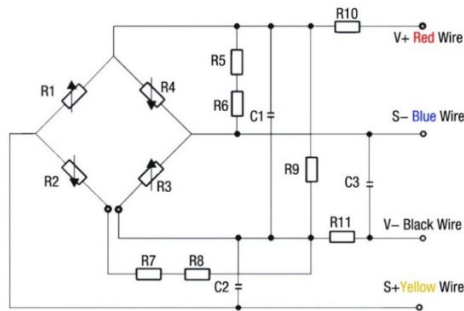
ESS333 Flush Diaphragm Flat Base Piezoresistive Sensor
Range: -100Kpa~10Kpa~10Mpa

ESS333P Flush Diaphragm Flat Base Piezoresistive Sensor
Range: -100Kpa~10Kpa~10Mpa



Piezo-resistive Wheatstone Bridge

ESS319I Amplified-PCB to Convert mv into Analog Signal



Ordering Procedure

ESS3	High Stable OEM Piezoresistive Sensor						
	Code	Model					
	12	Compact Size ϕ 12 Piezoresistive OEM Sensor					
	18	Low Range Piezoresistive OEM Sensor					
	19	High Stable Universal Piezoresistive OEM Sensor					
	19P	Flush Diaphragm Piezoresistive Pressure Sensor					
	20	Piezoresistive OEM Differential Pressure Sensor					
	22	Welded Piezoresistive Pressure Sensor					
	23	Welded Flush Diaphragm Piezoresistive Sensor					
	24	TO-8 Housing Piezoresistive Pressure Sensor					
	31	High Temperature Piezoresistive Pressure Sensor					
	32	Welded Flat Base Piezoresistive Pressure Sensor					
	33	Flush Diaphragm Flat Base Piezoresistive Sensor					
		Code	Span	Code	Span	Code	Span
		R01	0~10KPa	R07	0~1.0MPa	R13	0~40 MPa
		R02	0~35KPa	R08	0~2.0Mpa	R14	0~60 MPa
		R03	0~70KPa	R09	0~3.5 MPa	R15	0~100 MPa
		R04	0~100KPa	R10	0~7.0 MPa		
		R05	0~200KPa	R11	0~10.0 MPa		
		R06	0~400KPa	R12	0~25 MPa		
		Code	Pressure Type				
		G	Gauge				
		D	Differential				
		A	Absolute				
		S	Sealed Gauge				
		Code	Power Supply				
		M	1.5mA				
		V	3.3V 5V 10V				
		Code	Pressure connection				
		0	O-ring -NBR				
		1	O-ring -Viton				
		Code	Electric connection				
		1	Kovar pin				
		2	Rubber flexible silicon wires (10cm)				
ESS3	19	R10	G	M	0	2	

Note: ❶ Extremely attention must be paid to sensor installation process to avoid any miss conduction that affect the sensor performance, ❷ please protect the diaphragm and the compensated board carefully to prevent any damage. ❸ Please contact us if your requested working temperature lower than -20°C